

Lepidoptera family-group names proposed by Thaddeus William Harris in 1841

B. Christian Schmidt¹, J. Donald Lafontaine²

1 Canadian Food Inspection Agency, Canadian National Collection of Insects, Arachnids and Nematodes, K.W. Neatby Bldg., 960 Carling Ave., Ottawa, ON, Canada K1A 0C6 **2** Canadian National Collection of Insects, Arachnids, and Nematodes, Biodiversity Program, Agriculture and Agri-Food Canada, K.W. Neatby Bldg., C.E.F., Ottawa, Ontario, Canada K1A 0C6

Corresponding authors: B. Christian Schmidt (Chris.Schmidt@inspection.gc.ca);
J. Donald Lafontaine (Don.Lafontaine@agr.gc.ca)

Academic editor: James Adams | Received 3 December 2012 | Accepted 21 December 2012 | Published 6 February 2013

Citation: Schmidt BC, Lafontaine JD (2013) Lepidoptera family-group names proposed by Thaddeus William Harris in 1841. In: Schmidt BC, Lafontaine JD (Eds) Contributions to the systematics of New World macro-moths IV. ZooKeys 264: 219–226. doi: 10.3897/zookeys.264.4442

Abstract

In 1841, T. W. Harris published “A Report on the Insects of Massachusetts, Injurious to Vegetation,” a seminal work in North American Entomology and one of the first New World publications to describe Lepidoptera species. Although appearing in several subsequent editions, the eight family-group names proposed by Harris were largely overlooked. In summarizing Harris’ family-group names, we show that authorship for two Noctuidae names in current usage require changes: Acronictinae Harris, 1841 (originally as Acronyctadae) has priority over Heinemann, 1859, and Agrotini Harris, 1841 (as Agrotitidae) has priority over Rambur, 1848. Mamestradae Harris, 1841 is also a senior synonym of Mamestrinae Hampson, 1902 (Type genus: *Mamestra* Ochsenheimer, 1816), an available name that is currently a junior subjective synonym of Noctuidae: Noctuinae: Hadenini Guenée, 1837 (Type genus: *Hadena* Schrank, 1802). Geometridae: Ennominae: Hyberniini Harris, 1841 (as Hyberniadae), based on *Erranis* Hübner, [1825] (= *Hybernia* Berthold, 1827), has precedence over two family-group names with long-standing usage, Bistonini Stephens, 1850 and Boarmiini Duponchel, 1845, and a reversal of precedence for the latter two names over Hyberniini is proposed under ICZN guidelines.

Keywords

Acronictinae, Agrotini, Bistonini, Boarmiini, Ennominae, Geometridae, Hadenini, Hyberniini, Noctuidae

Introduction

In one of the earliest compendia of North American entomology, Thaddeus William Harris' "A Report on the Insects of Massachusetts, Injurious to Vegetation" describes the life histories of hundreds of insect species, often in extensive detail. Over a dozen Lepidoptera species were described and named by Harris therein, including familiar species such as *Lophocampa maculata*, *Acronicta americana*, and *Euxoa messoria*. First published in 1841, the "Report" was re-printed in 1842 (Harris 1842), and subsequently released in a 2nd (Harris 1852) and 3rd edition (Harris 1862). The 3rd edition was published after Harris' death in 1856, and included the addition of butterfly species based on Harris' manuscripts, including descriptions of 10 new species. Harris described over 50 new taxa, 40 of which are currently valid species names.

Less well-known are the family-group names proposed by Harris in 1841, only two of which are currently attributed to him – Lasiocampidae (Lasiocampoidea) and Ceratocampinae (Bombycoidea: Saturniidae). In an earlier work on sphinx moths (Harris 1839), Harris named the Macroglossiadae, currently Sphingidae: Macroglossinae. The purpose of this paper is to review the eight family-group names proposed by Harris (1841). Authorship for two family-group names in current usage should be attributed to Harris in accordance with publication priority, viz. Acronictinae Harris, 1841 (*nec.* Heinemann, 1859) and Agrotini Harris, 1841 (*nec.* Rambur, 1848). The remaining Harris names are junior homonyms or junior subjective synonyms; one is proposed as a *nomen oblitum*.

Family-group names and ICZN

Harris classified the Lepidoptera similar to the categories proposed by Linnaeus, where the non-sphingid moths were further divided into seven groups, the Bombyces, Noctuae, Geometrae, Pyralides, Tortrices, Tineae and Alucitae. Harris (1841) proposed new family-group names in the Bombyces (Liparidae, Lasiocampadae, Ceratocampadae), Noctuae (Notodontadae, Acronyctadae, Agrotitidae, Mamestradae), and Geometrae (Hyberniadae). He indicated new family-group names by stating each "may be called" or "which I call," and indicated that the name was based on what he considered the corresponding "core genus." This prose was not followed for family names he knew were already named, such as the Lithosiadae (p. 240), and the Nonagriadae (p. 318), both used by Harris in 1833 along with other previously established family-group names. Eight family-group names were proposed by Harris in 1841 (and not included by him in his 1833 work), and we compared these to those summarized by Speidel and Naumann (2005) and Fibiger and Lafontaine (2005) for the Noctuoidea, and Forum Herbulot (2003) for the Geometroidea.

Family-group names proposed by Harris, 1841

Original spelling of family-group names is given in bold, followed by the current taxonomic position and emended spelling in square brackets.

Liparidae (p. 260) [Lymantriidae Hampson, 1893]. A junior synonym of *Liparides* Boisduval, 1834. Both family-group names are invalid due to homonymy of the type genus, *Liparis* Ochsenheimer, 1810 (= *Liparis* Scopoli, 1777 [Pisces]).

Lasiocampadae (p. 265) [Lasiocampoidea: Lasiocampidae Harris, 1841]. Correctly attributed to Harris in recent publications, e.g., Franclemont (1973: 25), de Freina and Witt (1987: 33).

Ceratocampadae (p. 287) [Saturniidae: Ceratocampinae Harris, 1841]. Correctly attributed to Harris in recent works (e.g., Tuskes et al. 1996), but Ferguson (1971: 18) considered Citheroniinae Neumoegen and Dyar, 1894 to be the valid, although junior, name.

Acronyctadae (p. 316) [Noctuidae: Acronictinae Harris, 1841]. A senior synonym of *Acronyctadae* Heinemann, 1859.

Agrotitidae (p. 321) [Noctuidae: Noctuinae: Agrotini Harris, 1841]. A senior synonym of *Agrotides* Rambur, 1848, currently ranked as a tribe (e.g., Lafontaine 2004, Fibiger and Lafontaine 2005).

Mamestradae (p. 329) [Noctuidae: Noctuinae: Hadenini Guenée, 1837]. A senior synonym of *Mamestrinae* Hampson, 1902. *Mamestrini* (type genus: *Mamestra* Ochsenheimer, 1816) is currently considered a junior subjective synonym of *Hadenini* Guenée, 1837 (as *Hadenidi*), e.g., Fibiger and Lafontaine (2005).

Herminiadae (p. 344) [Erebidae: Herminiinae Leach, [1815]]. A junior synonym of *Herminida* Leach, [1815].

Hyberniadae (p. 332) [Geometridae: Ennominae: Boarmiini Duponchel, 1845]. *Hybernia* Berthold, 1827 is a junior objective synonym of *Erannis* Hübner, [1825] (Ferguson 1983). *Hyberniini* Harris has priority over *Hyberniini* Duponchel, 1845 (as *Hibernites*), and also over *Boarmiini* Duponchel, 1845 (as *Boarmites*) and *Bistonini* Stephens, 1850 (as *Bistonidi*). Although mostly treated as a valid tribe prior to Holloway (1994), *Bistonini* has recently been subsumed within *Boarmiini* (e.g., Holloway 1994, Sihvonen et al. 2011). *Hyberniini* was used (as *Hybernites*) by Bruand (1846), Stephens (1850) and Guenée (1857), but has apparently not been used as a

family-group name after 1899 and therefore meets requirement 23.9.1.1 for “Reversal of Precedence” under ICZN rules. Both Boarmiini and Bistonini have long-standing usage in the literature, summarized in Table 1, and thereby meet the second requirement (23.9.1.2) for “Reversal of Precedence” (ICZN), which states that the name in question should be cited in at least 25 works, published by at least 10 authors in the immediately preceding 50 years and encompassing a span of not less than 10 years. The Geometridae family-group names (Forum Herbulot 2003) in question should therefore be revised as follows:

- Boarmiini Duponchel, 1845(Boarmites) *nomen protectum*
- = Hyberniini Harris, 1841 (Hyberniadae) *nomen oblitum*
- = Hyberniini Duponchel, 1845 (Hibernites) junior synonym of Hyberniadae Harris, 1841
- = Bistonini Stephens, 1850 (Bistonidi)

Table 1. Publications citing Boarmiini or Bistonini as a family-group name.

Boarmiini	Bistonini
Brehm and Fiedler 2003, 2004, 2005; Ferguson 1983, 2008; Forbes 1948; Holloway 1994, 2011; Krüger 2007; McGuffin 1977, 1981, 1987; Minet and Scoble 1998; Öunap et al. 2011; Patočka 1986, 1993; Pitkin 2002; Pohl et al. 2010; Rindge 1972, 1976; Riotte 1992; Sihvonen et al. 2011; Stephens and Gibbs 2003; Vargas 2007, 2010; Viidalepp et al. 2007; Wahlberg et al. 2010; Young 2003.	Butler 1986; Ferguson 1983; Ferris 2010; Forbes 1948; Hackray et al. 1984; Holloway 1994; Hunter 1995; McGuffin 1977, 1981, 1987; Miller 1996; Minet and Scoble 1998; Öunap et al. 2011; Patočka 1978; Pellmyr 1980; Pitkin 2002; Pohl et al. 2010; Powell and Opler 2009; Rindge 1975, 1985; Riotte 1992; Rose 1985; Viidalepp 1989; Viidalepp et al. 2007; Wahlberg et al. 2010.

Acknowledgements

James Adams served as Academic Editor and he, along with Eric Metzler and an anonymous reviewer, made numerous suggestions that significantly improved the manuscript and we thank them for their contributions.

References

Brehm G, Fiedler K (2003) Faunal composition of geometrid moths changes with altitude in an Andean montane rain forest. *Journal of Biogeography* 30: 431–440. doi: 10.1046/j.1365-2699.2003.00832.x

Brehm G, Fiedler K (2004) Bergmann’s rule does not apply to geometrid moths along an elevational gradient in an Andean montane rain forest. *Global Ecology and Biogeography* 13(1): 7–14. doi: 10.1111/j.1466-882X.2004.00069.x

- Brehm G, Fiedler K (2005) Diversity and community structure of geometrid moths of disturbed habitat in a montane area in the Ecuadorian Andes. *Journal of Research on the Lepidoptera* 38: 1–14.
- Bruand CT d’Uzelle (1845–[1851]) Catalogue systématique et synonymique des lépidoptères du Département du Doubs. *Mémoires et comptes rendus de la Société libre d’émulation du Doubs*, Besançon 2(2): 97–124.
- Butler L (1986) Biology and description of immature stages of *Phigalia strigateria* [sic] (Minot) (Geometridae). *Journal of the Lepidopterists’ Society* 40: 289–297.
- Dugdale JS (1961) Larval characters of taxonomic significance of New Zealand ennomines (Lepidoptera: Geometridae). *Transactions of the Royal Society of New Zealand* 1: 215–233.
- Duponchel PAJ (1844[–1846]) Catalogue Methodique des Lepidoptères d’Europe. Paris, 553 pp.
- Ferguson DC (1971) Bombycoidea: Saturniidae. Fasc. 20.2A. In: Dominick RB, Ferguson DC, Franclemont JG, Hodges RW, Munroe EG (Eds) *The moths of America north of Mexico*. Wedge Entomological Research Foundation, Washington, DC, 1–154.
- Ferguson DC (1983) Geometridae. In: Hodges RW, Dominick T, Davis DR, Ferguson DC, Franclemont JG, Munroe EG, Powell JA (Eds) *Check list of the Lepidoptera of America north of Mexico*. E.W. Classey Ltd. and Wedge Entomological Research Foundation, London, UK, 88–107.
- Ferguson DC (2008) Geometroidea, Geometridae (part): Ennominae (part–Abraxini, Cassymini, Macariini). In: Hodges RW et al. (Eds) *The moths of North America*, fascicle 17.2. Wedge Entomological Research Foundation, Washington, DC, 576 pp.
- Ferris CD (2010) A new geometrid genus and species from southeastern Arizona (Ennominae: Nacophorini). *Journal of the Lepidopterists’ Society* 64(3): 147–153.
- Fibiger M, Lafontaine JD (2005) A review of the higher classification of the Noctuoidea (Lepidoptera) – with special reference to the Holarctic fauna. *Esperiana* 11: 7–92.
- Forbes WTM (1948) *The Lepidoptera of New York and neighboring states*, Part II. Geometridae, Sphingidae, Notodontidae, Lymantriidae. Cornell University Agricultural Experiment Station Memoirs 274: 1–263.
- Forum Herbulot (2003) The Forum Herbulot world list of family group names in Geometridae. 11 pp. <http://www.herbulot.de> [accessed Oct. 2012]
- Franclemont JG (1973) Mimallonoidea: Mimallonidae and Bombycoidea: Apatelodidae, Bombycidae, Lasiocampidae. Fasc. 20.1. In: Dominick RB, Ferguson DC, Franclemont JG, Hodges RW, Munroe EG (Eds) *The moths of America north of Mexico*. Wedge Entomological Research Foundation, Washington, DC, 86 pp.
- Freina JJ de, Witt TJ (1987) *Die Bombyces und Sphinges der Westpalaearktis* (Insecta, Lepidoptera), Band 1. Edition Forschung und Wissenschaft, München, 708 pp.
- Guenée A (1857) *Uranides et Phalenites. Histoire Naturelle des Insectes, Species General des Lépidoptères*, Vols 9 & 10. Paris, 584 pp.
- Hackray J, Sarlet LG, Berger LA (1984) Catalogue des macrolepidopteres de Belgique. Sixieme superfamille Geometroidea. Vingt troisieme famille Geometridae. *Lambillionea* 84: 241–256.
- Harris TW (1833) Insects. In: Hitchcock E (Ed.). *Report of the geology, minerology, botany, and zoology of Massachusetts*. JS and C Adams, Amherst, 566–595.

- Harris TW (1839) Descriptive Catalogue of the North American Insects belonging to the Linnaean Genus *Sphinx* in the Cabinet of Thaddeus William Harris, M. D., Librarian of Harvard University. The American Journal of Science and Arts (No. 2) 36: 282–320.
- Harris TW (1841) A report on the insects of Massachusetts injurious to vegetation. Folsom, Wells, and Thurston, Printers to the University. Cambridge, 459 pp.
- Harris TW (1842) A treatise on some of the insects of New England, which are injurious to vegetation. John Owen, Cambridge. 459 pp. [reprint of 1841 ed.] doi: 10.5962/bhl.title.8976
- Harris TW (1852) A treatise on some of the insects of New England, which are injurious to vegetation. White & Potter, Boston, 513 pp.
- Harris TW (1862) A treatise on some of the insects of New England, which are injurious to vegetation. 3rd ed. Edited by Charles Flint. William White, Boston, 640 pp.
- Holloway JD (1993). The Moths of Borneo: Family Geometridae, subfamily Ennominae. Malayan Nature Journal 47: 1–309.
- Holloway JD (2011) The Moths of Borneo: Families Phaudidae, Himantopteridae and Zygaenidae; revised and annotated checklist. Malayan Nature Journal 63: 1–548.
- Hunter AF (1995) The ecology and evolution of reduced wings in forest macrolepidoptera. Evolutionary Ecology 9(3): 275–287. doi: 10.1007/BF01237773
- (ICZN) International Commission on Zoological Nomenclature (1999) International code of zoological nomenclature, 4th edition, London, UK. Online edition. <http://www.nhm.ac.uk/hosted-sites/iczn/code/> [accessed Oct.2012]
- Krüger M (2007) Composition and origin of the geometrid fauna (Lepidoptera) of the Sneeu-berge, Eastern Cape, with descriptions of new taxa. Annals of the Transvaal Museum 44: 25–66.
- Lafontaine JD (2004) Noctuoidea: Noctuidae (part) – Agrotini. In: Hodges RW (Ed.) The Moths of North America. Fascicle 27.1. The Wedge Entomological Research Foundation, Washington, 394 pp.
- McGuffin WC (1977) Guide to the Geometridae of Canada (Lepidoptera) II. Subfamily Ennominae. 2. Memoirs of the Entomological Society of Canada 101: 1–191. doi: 10.4039/entm109101fv
- McGuffin WC (1981) Guide to the Geometridae of Canada (Lepidoptera) II. Subfamily Ennominae. 3. Memoirs of the Entomological Society of Canada 117: 1–153. doi: 10.4039/entm113117fv
- McGuffin WC (1987) Guide to the Geometridae of Canada (Lepidoptera) II. Subfamily Ennominae. 4. Memoirs of the Entomological Society of Canada 138: 1–181. doi: 10.4039/entm119138fv
- Miller WE (1996) Population behavior and adult feeding capability in Lepidoptera. Environmental Entomology 25: 213–226.
- Minet J, Scoble MJ (1999) The drepanoid/geometroid assemblage. In: Kristensen NP (Ed.) Lepidoptera: moths and butterflies. Handbook of Zoology IV, Part 35. Walter de Gruyter, New York, NY, 301–320.

- Õunap E, Javoiš J, Viidalepp J, Tammaru T (2011) Phylogenetic relationships of selected European Ennominae (Lepidoptera: Geometridae). *European Journal of Entomology* 108(2): 267–273.
- Patočka J (1978) Zur Puppenmorphologie und -taxonomie der Unterfamilie Ennominae, insbesondere der Tribus Bistonini (Lepidoptera, Geometridae). *Věstník Československé společnosti zoologické* 42: 143–151.
- Patočka J (1986) Zur Kenntnis der Puppen der Tribus Boarmiini (Lepidoptera, Geometridae) von Mitteleuropa. *Acta Entomologica Bohemoslovica* 83: 301–315.
- Patočka J (1993) Über einige Puppen der Spanner aus der Tribus Boarmiini (Lepidoptera, Geometridae, Ennominae). *Entomologische Berichten (Amsterdam)* 53: 114–120.
- Pellmyr O (1980) Morphology of the genitalia of Scandinavian brachypterous female Geometridae (Lepidoptera). *Insect Systematics & Evolution* 11(4): 413–423. doi: 10.1163/187631280794709990
- Pitkin LM (2002) Neotropical ennomine moths: a review of the genera (Lepidoptera: Geometridae). *Zoological Journal of the Linnean Society* 135: 121–401. doi: 10.1046/j.1096-3642.2002.01200.x
- Pohl GR, Anweiler GG, Schmidt BC, Kondla NG. (2010) An annotated list of the Lepidoptera of Alberta, Canada. *ZooKeys* 38: 1–549. doi: 10.3897/zookeys.38.383
- Powell JA, Opler PA (2009) *Moths of western North America*. University of California, Berkeley, CA, 383 pp. doi: 10.1525/california/9780520251977.001.0001
- Rindge FH (1972) A revision of the moth genus *Mericisca* (Lepidoptera, Geometridae). *Bulletin of the American Museum of Natural History* 149: 345–406.
- Rindge FH (1975) A revision of the new world Bistonini (Lepidoptera: Geometridae). *Bulletin of the American Museum of Natural History* 156: 69–155.
- Rindge FH (1976). Distributional notes on some Ennominae from Baja California, with descriptions of new species (Lepidoptera, Geometridae). *American Museum Novitates* 2592.13 pp.
- Rindge FH (1985) A revision of the moth genus *Acronyctodes*, with a review of the New World Bistonini (Lepidoptera, Geometridae). *American Museum Novitates Supplement* 2807: 1–24.
- Riotte JCE (1992) *Annotated list of Ontario Lepidoptera*. Royal Ontario Museum, Life Sciences Miscellaneous Publications. Toronto, Canada, 208 pp.
- Rose LJ (1985) A propos du melanisme chez *Eubyja betularia* (L., 1758) (Lep. Geometridae Ennominae Bistonini). *Bulletin de la Societe Entomologique de Mulhouse* 1985: 1–15.
- Sihvonen P, Mutanen M, Kaila L, Brehm G, Hausmann A, et al. (2011) Comprehensive molecular sampling yields a robust phylogeny for geometrid moths (Lepidoptera: Geometridae). *Public Library of Science ONE* 6(6): e20356. doi: 10.1371/journal.pone.0020356
- Speidel W, Naumann CM (2005) A survey of family-group names in the noctuid moths (Lepidoptera). *Systematics and Biodiversity* 2: 191–221. doi: 10.1017/S1477200004001409
- Stephens JF (1850) *List of the Specimens of British Animals in the Collection of the British Museum. Part V. Lepidoptera*. British Museum, London, 353 pp.

- Stephens AE, Gibbs GW (2003) Two new species of *Pseudocoremia* and reinstatement of *P. pergrata* as a species (Lepidoptera: Geometridae: Ennominae). New Zealand Entomologist 26: 61–64. doi: 10.1080/00779962.2003.9722109
- Tuskes PM, Tuttle JP, Collins MM (1996) The wild silkmoths of North America: a natural history of the Saturniidae of the United States and Canada. Cornell University Press, Ithaca, NY, 250 pp.
- Vargas HA (2007) Dos nuevas especies de *Iridopsis* Warren (Lepidoptera, Geometridae) del norte de Chile. Revista Brasileira de Entomologia 51: 138–141. doi: 10.1590/S0085-56262007000200003
- Vargas HA (2010) A new species of *Glena* Hulst (Lepidoptera, Geometridae) from northern Chile. Revista Brasileira de Entomologia 54: 42–44. doi: 10.1590/S0085-56262010000100005
- Viidalepp J (1989) A new genus and a new tribe of geometrid moths (Lepidoptera: Geometridae: Desertobiini) from Middle and Central Asia. Trudy Zoologicheskogo Instituta 200: 94–109.
- Viidalepp J, Tammaru T, Snäll N, Ruohomäki K, Wahlberg N (2007) *Cleorodes* Warren, 1894 does not belong in the tribe Boarmiini (Lepidoptera: Geometridae). European Journal of Entomology 104: 1–303.
- Wahlberg N, Snäll N, Viidalepp J, Ruohomäki K, Tammaru T (2010) The evolution of female flightlessness among Ennominae of the Holarctic forest zone (Lepidoptera, Geometridae). Molecular Phylogenetics and Evolution 55: 929–938. doi: 10.1016/j.ympev.2010.01.025
- Young CJ (2003) The place of the Australian Nacophorini in the Geometridae. Spixiana 26: 199–200.